Comparison of draft rule language: November 2016 vs. July 2017

Note: Bolded text represents new language. Italicized text in square brackets represents strikeouts.

November 2016	July 2017
(I) Lake Ecoregion Criteria—Maximum Ambient Concentration of Chlorophyll-a (Chl-a) that is based on the geometric mean of a minimum of three (3) years of data for lakes within a lake ecoregion that have not been assigned site- specific criteria; and	**(I) Lake Ecoregion Criteria—Maximum Ambient Concentration of Chlorophyll-a (Chl-a) that is based on an annual geometric mean of samples collected May through September with an allowable exceedance frequency of one in three (1-in-3) years for lakes within a lake ecoregion that have not been assigned site-specific criteria; and**
D. Nutrient Screening Values—The following nutrient screening values represent nutrient concentrations that, over time, set the potential to threaten the designated uses assigned in rule: **(I) Long-Term Screening Value—Maximum Ambient Concentrations of TP, TN, and Chl-a that are based on the geometric mean of a minimum of three (3) years of nutrient data; and** **(II) Short-Term Screening Value—Maximum Ambient Concentrations of TP, TN, and Chl-a that are based on the geometric mean of one (1) year of nutrient data.**	**D. Nutrient Screening Values— Maximum Ambient Concentrations of TP, TN, and Chl-a that are based on the geometric mean of one (1) year of nutrient data collected May through September. Nutrient screening values represent nutrient concentrations that, over time, set the potential to threaten the designated uses assigned in rule. In the absence of site-specific targets, nutrient screening values will be used as targets for Total Maximum Daily Load (TMDL) development.**
3. **Lake Ecoregion Criteria and Long-Term and Short-Term Screening Values for TP, TN, and Chl-a are listed in Table L. Lake Site-Specific Criteria for TP, TN, and Chl-a are listed in Table M. Additional lake site-specific criteria may be developed in accordance with subsection (5)(S) to account for the unique characteristics of the waterbody that affect trophic status, such as lake morphology, hydraulic residence time, temperature, internal nutrient cycling, or watershed contribution from multiple ecoregions. TP criteria for tributary arms of Class L2 lakes are listed in Table N.**	3. **Lake Ecoregion Criteria and Screening Values for TP, TN, and Chl-a are listed in Table L. Lake Site-Specific Criteria for TP, TN, and Chl-a are listed in Table M. Additional lake site-specific criteria may be developed in accordance with subsection (5)(S) to account for the unique characteristics of the waterbody that affect trophic status, such as lake morphology, hydraulic residence time, temperature, internal nutrient cycling, or watershed contribution from multiple ecoregions. TP criteria for tributary arms of Class L2 lakes are listed in Table N.**
4. All TP, TN, and **Chl-a** concentrations must be calculated as the geometric mean of a minimum of four (4) representative samples per year for **three (3) years for purposes of comparison to criteria and long-term screening values.** ***[four (4) years that are not necessarily consecutive].*** **All TP, TN, and Chl-a concentrations must be calculated as the geometric mean of a minimum of four (4) representative samples per year for one (1) year for purposes of comparison to short-term screening values.** All samples must be collected from the **lake** surface, near the outflow end of the lake, and during the period May 1– **September 30** *[August 31]*.	4. All TP, TN, and **Chl-a***[chlorophyll]* concentrations must be calculated as the geometric mean of a minimum of four (4) representative samples per year for **one (1) year for purposes of comparison to criteria and screening values.** *[four (4) years that are not necessarily consecutive]*. All samples must be collected from the **lake** surface, near the outflow end of the lake, and during the period May 1– **September 30***[August 31]*.

November 2016	July 2017
6. Lakes with water quality that exceed long-term or short-term screening values for Chl-a, TN, or TP will be assessed for impairment using a weight of evidence evaluation. **A. Weight of evidence factors for aquatic life uses include:** **(I) Occurrence of eutrophication related fish mortality or morbidity events;** **(II) Epilimnetic excursions from dissolved oxygen or pH criteria; and** **(III) Excessive levels of mineral turbidity that consistently limit algal productivity during the period May 1 – September 30.** **(B) Weight of evidence factors for drinking water supply uses include:** **(I) Impacts on water treatment operations due to eutrophication including excessive disinfection byproduct formation or unacceptable aesthetics; and** **(II) Reoccurring algal toxins in excess of one (1) microgram per liter microcystins.**	**6. Lakes with water quality that exceed screening values for Chl-a, TN, or TP are to be deemed impaired for excess nutrients if any of the following eutrophication impacts are documented for the respective designated uses within the same year.** **A. Eutrophication impacts for aquatic life uses include:** **(I) Occurrence of eutrophication-related mortality or morbidity events for fish and other aquatic organisms;** **(II) Epilimnetic excursions from dissolved oxygen or pH criteria;** **(III) Cyanobacteria counts in excess of 100,000 cells per milliliter (cells/ml);** **(IV) Observed shifts in aquatic diversity attributed to eutrophication; and** **(V) Excessive levels of mineral turbidity that consistently limit algal productivity during the period May 1 – September 30.** **B. Eutrophication impacts for drinking water supply uses include:** **(I) Impacts on water treatment operations due to eutrophication;** **(II) A statistically significant projected trend line is expected to exceed the chlorophyll criterion within 5 years.** **(III) Excessive disinfection byproduct formation due to eutrophication as determined by an exceedance of 80 micrograms per liter Total Trihalomethanes (TTHMs) or 60 micrograms per liter Haloacetic Acids (HAA5s) as an average of the Safe Drinking Water Act compliance monitoring results during the second and third quarters of the year; and** **(IV) Algal toxins in excess of the following values:** **(a) Microcystin: 0.3 micrograms per liter; and** **(b) Cylindrospermopsin: 0.7 micrograms per liter.**
7. Lakes with water quality that exceed long-term or short-term Screening values for Chl-a, TN, or TP for which the weight of evidence as described in paragraph 6 of this rule does not clearly indicate impairment or lack of impairment will receive continued observation and monitoring until such time as a determination can be made concerning their impairment status.	

Note: Definition of eutrophication 10 CSR 20-7.031 **(K) Eutrophication—The process by which a body of water becomes enriched in dissolved nutrients, such as nitrogen and phosphorus, that stimulate the excessive growth of algae and other plants. Eutrophication may be accelerated by human activities.**